Be careful on the roads—amphibians are migrating!

On rainy nights sometime between early March and late April, many species of salamanders and frogs migrate from their winter homes in the woods back to the wetlands and vernal pools where they breed. Often, this journey (which can be over ¼ of a mile!) takes them across a road or driveway. Each year, thousands of these slow-moving frogs and salamanders get squished by cars as they try to cross.

From early March to late April, please drive carefully if you see frogs or salamanders on the road. Even better, if it is safe and there are no other cars coming, stop to help them across the road—gently move them off the road in the direction that they are heading.

If you notice an area where many frogs and salamanders are crossing the road in Lexington, please email the location to: landstewards@lexingtonma.gov Your observations will help us to map road crossings where salamanders and frogs are especially vulnerable and learn more about where their habitats are located. This information can then be useful for volunteers interested in starting "crossing guard" programs for the breeding season.

Some of these salamanders can live to be more than 20 years old, and they return to the same vernal pool year after year. To learn more about these amazing creatures, check out the article on the next page by Fran Ludwig, or check out one of these links:

Guide to helping salamanders across the road:
www.beec.org/projects/Salamander_brochure.pdf
The Vernal Pool Association:
www.vernalpool.org/vernal_1.htm

A Spring Ritual: Wicked Big Puddles

by Fran Ludwig

For me, spring begins on a warm rainy night in March or April when spotted salamanders (Ambystoma maculatum) begin their annual mating ritual. For over 20 years, when the temperature is over 40°F, the ground is wet, and darkness has fallen, I've visited small vernal pools in the area of Minuteman Regional High School. It's always a thrill to see the 8-10 inch long amphibians. With patent leather black body and enamel-yellow spots, they gracefully swim through the water of their "wicked big puddle"—so named by Leo Kenny of the Vernal Pool Association www.vernalpoolorg. The silent salamanders are often accompanied by the raucous "quacking" of wood frogs, "peenting" woodcocks, and shrill of spring peepers—all pursuing their own mating rituals.

A spotted salamander makes its way to a vernal pool. Photo courtesy of The Vernal Pool Association.

My notes on three pools in Lexington's Cranberry Hill Conservation Area span over 20 years. I've discovered that the earliest breeding time was March 9 in 1998 and 2000 and the latest was April 10 in 1993. There does not seem to be a pattern in the dates. I think it may have to do with how much and how late into the season it snows for a given year. Solitary adult salamanders winter underground in abandoned mole or shrew tunnels within about 500 feet of their home pool. Thawing ground and warm rains allow these cold-blooded animals to migrate. Sometimes salamanders and frogs even cross partially ice-covered ponds to find open water.

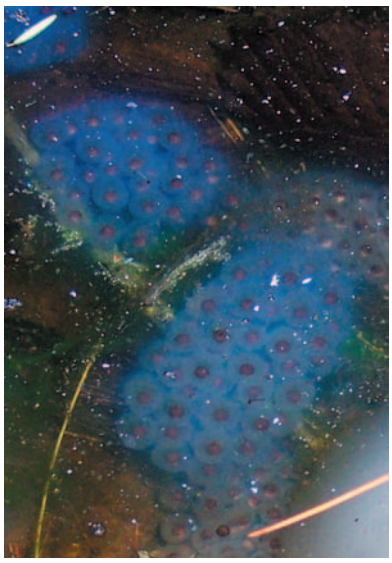
Hundreds of spotted salamanders and wood frogs head for the pools where they were hatched in an inexorable annual nocturnal migration march. Though there often seems to be a peak of salamander breeding activity, there may be several "small nights" of mating rather than just one "big night." On one occasion, I saw 100 spotted salamanders located in several clumps (congresses) around a pool about 50 feet in diameter.

As graceful as ballet dancers, the salamanders glide around each other in a writhing ball reminiscent of an Escher print. Males eventually deposit spermatophores on the leafy pool bottom. These look like small white golf tees. The fat females take these into their body in order to fertilize their eggs. Within a few days, the females lay a clump with about 200 eggs in a jelly like mass on submerged branches in the pool. Some salamanders remain in the pool for a week or two after the peak of breeding activity. They

need another rainy night in order to move back to their forest burrows without drying out.

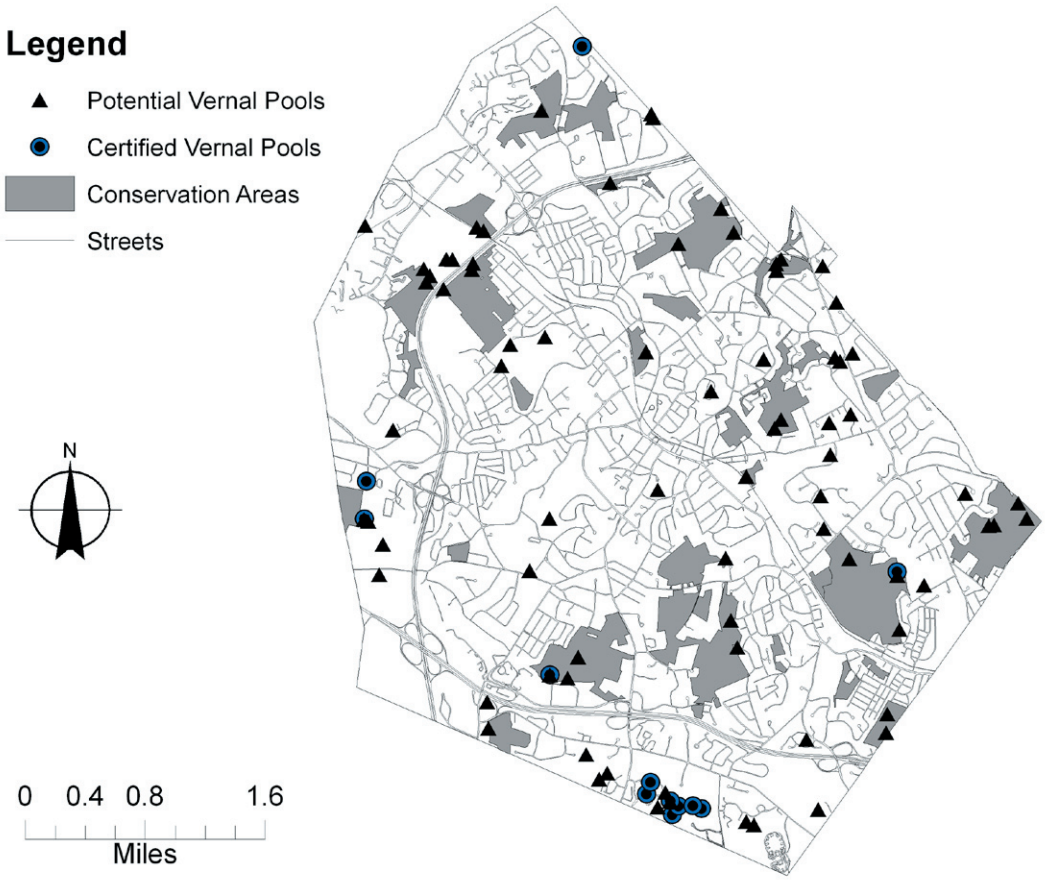
But many vernal pools don't look like places where so much exciting activity takes place. In fact, one of the most active pools at Cranberry Hill unfortunately often collects fast food cups and tires discarded by unappreciative and unaware visitors. The state of Massachusetts protects such fragile vernal pools from development (but not litter) through a process of certification. In Lexington, 12 such pools are certified, most by interested amateur naturalists.

Vernal pools are unique ecosystems that provide just the right breeding conditions for species such as salamanders, wood frogs, and beautiful little transparent crustaceans called fairy shrimp. Vernal pools usually dry up in the summer, thus eliminating fish that might eat amphibian eggs or young. This also means that salamander and frog eggs must quickly develop into adults so that they can leave the pool before it evaporates. When snows melt in early spring and the pools once again fill, the yearly cycle is complete as migration begins once again.



Spotted salamander eggs developing in a vernal pool. Photo by Emily Schadler.

Vernal Pools in Lexington



Lexington is home to 12 certified vernal pools (shown here as circles), most of which were documented by citizen volunteers. Vernal pools are protected by state regulations after they have been certified through the National Heritage and Endangered Species Program (NHESP) process. Using aerial photography, NHESP has also identified 77 potential vernal pool sites in Lexington (shown here as triangles), all of which need to be certified before gaining protection. Landowner permission should be gained before documenting pools on private land. Certification is best done during spring amphibian migration. For more information, contact the Conservation office at landstewards@lexingtonma.gov. For more on certification, visit: www.vernalpool.org/macert_3.htm.